



**INSTITUTUL DE ARHEOLOGIE „VASILE PÂRVAN”**

**MATERIALE ȘI CERCETĂRI ARHEOLOGICE**  
**SERIE NOUĂ, SUPPLEMENTUM III**

**IN MEMORIAM**  
**EUGEN NICOLAE**

**EDITAT DE**  
**ROXANA DOBRESKU, AUREL VÎLCU**

**BUCUREȘTI**  
**2025**

**COPERTA: Dan Iulian MĂRGĂRIT**

**MCA SERIE NOUĂ  
SUPPLEMENTUM III**

[www.mcajournal.ro](http://www.mcajournal.ro)

**Tehnoredactor: Ofelia COȘMAN  
Secretar de redacție: Dana COSTIN**

**Descrierea CIP a Bibliotecii Naționale a României**

**In memoriam Eugen Nicolae / ed.: Roxana Dobrescu, Aurel Vîlcu -**

Târgoviște: Cetatea de scaun, 2025

Conține bibliografie

ISBN 978-606-537-820-9

I. Dobrescu, Roxana (ed.)

II. Vîlcu, Aurel (ed.)

902

929

**Toate articolele publicate în *Materiale și Cercetări Arheologice* sunt *peer-reviewed*.  
*Materiale și Cercetări Arheologice* este indexată în următoarele baze de date:  
Persée, Copernicus, ERIH PLUS, Scopus, CEEOL, EBSCO și DOAJ.**

Acest volum a fost editat cu sprijinul financiar al Institutului de Arheologie „Vasile Pârvan”.



(1955–2024)

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# ONE MAN'S TRASH IS ANOTHER MAN'S TREASURE – THE CASE OF THE OSSEOUS DEBITAGE WASTE FROM DRĂGUȘENI – OSTROV

” ... technology also forms the centerpiece of practically all research on the ancient past because the archaeological record is made up of the material remains of people's activities” (Dobres 2010, p. 103).

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**Keywords:** Chalcolithic, Romania, Cucuteni-Trypillia culture, raw materials, debitage methods, waste, blanks, preforms

**Abstract:** Romanian studies on prehistoric osseous industries focused mostly on the finished pieces which usually preserve only the marks resulted from the final stages of the shaping operation. Waste debitage artefacts and blanks are rarely mentioned, and at times they had not even been collected during the archaeological excavations. We would like to draw attention precisely to these types of archaeological remains, often more crucial to the reconstruction of the technological schemes for raw material processing than the finished pieces. As case study we selected the assemblage from the Cucuteni-Trypillia settlement at Drăgușeni – Ostrov (Romania). The site yielded a substantial osseous assemblage among which a significant amount of waste. The debitage operation through bi- or quadri-partition was carried out on bone, mainly by double grooving. Bipartition was most frequently used on antler, carried out by double grooving. The presence of finished pieces made on flat blanks is an indicator of longitudinal debitage while the presence of waste debitage allowed for the identification of the combination of procedures involved in the debitage operations.

**Cuvinte-cheie:** calcolitic, România, Cucuteni-Tripolie, materii prime, metode de debitaj, resturi de debitaj, suporturi, preforme

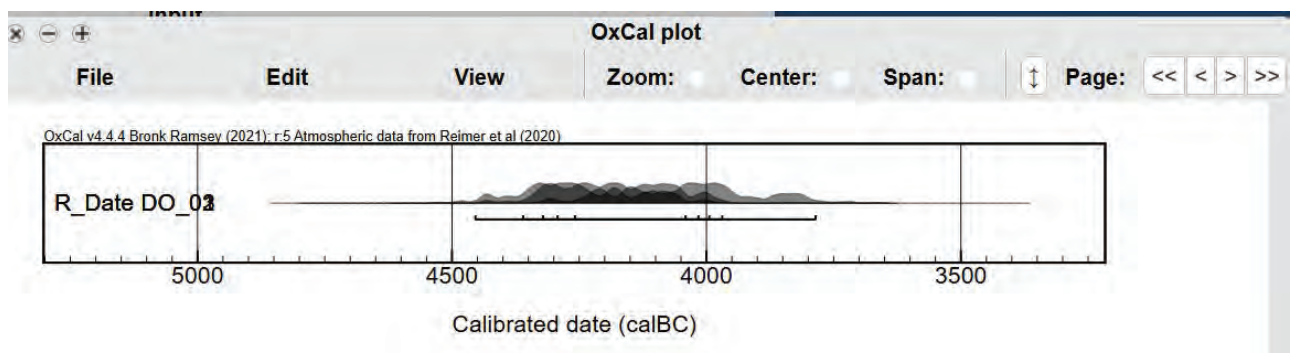
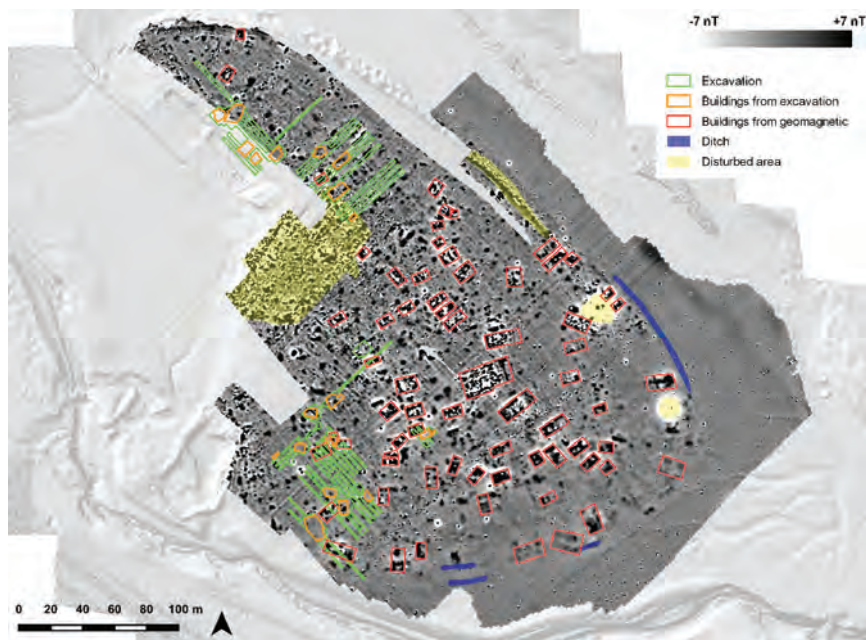
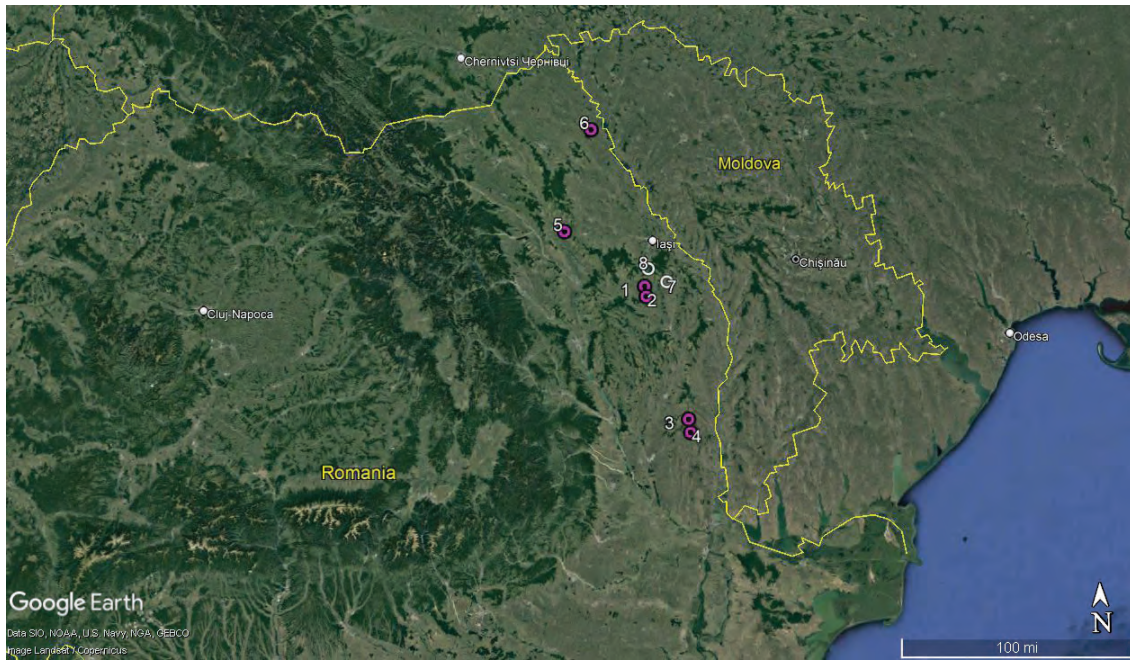
**Rezumat:** Studiile privind industria materiilor dure animale preistorice din România s-au concentrat în principal asupra pieselor finite, care de obicei păstrează doar urmele rezultate din etapele finale ale obținerii uneltelor respective. Resturile de debitaj și suporturile sunt rareori menționate, probabil din cauză că uneori nu au fost colectate în timpul săpăturilor arheologice. Dorim să atragem atenția tocmai asupra acestor tipuri de piese, adesea mai importante pentru reconstituirea schemelor tehnologice de prelucrare a materiilor prime decât piesele finite. Ca studiu de caz, am ales așezarea Cucuteni-Trypillia de la Drăgușeni – Ostrov (România). Ansamblul de piese din materii dure animale este substanțial și cuprinde și un număr semnificativ de resturi de debitaj. Debitajul prin bi- sau quadri-partiție a fost realizat în principal prin dublu rainurage în cazul osului. Bipartiția a fost utilizată cel mai frecvent pe corn, tot prin dublu rainurage. Prezența pieselor finite realizate pe suporturi plate este un bun indicator al debitajului longitudinal, în timp ce prezența deșeurilor a permis identificarea combinației de proceduri utilizate pentru operațiunile de debitaj.

## INTRODUCTION

Most Romanian studies on prehistoric osseous industries generally focus on finished artefacts. But the latter usually preserve only the marks left by shaping, which eliminates previous debitage traces. It is these last-mentioned traces that allow us to identify the general debitage methods (*bi-* or *quadri-*partition, transversal segmentation, extraction, etc.), yet not the combination of procedures needed during the debitage. Therefore, in most cases, the debitage methods employed were identified based solely on the recovered blanks (flat or in volume). Both waste debitage and blanks are rarely mentioned in publications for two reasons: either they were not collected during the excavations, or they were not identified as worked artefacts but as mere faunal remains. Most studies dismiss them in one phrase: “*the general assemblage also comprises flint, bone and antler tools*”.

Differently, European studies draw special attention on this category of artefacts as they provide information related to their production or even to the presence of manufacturing workshops (e.g. Vitezović 2013) as suggested by certain agglomerations of waste/blanks/preforms.

The assemblage from the Cucuteni A4 settlement at Drăgușeni – Ostrov (Romania) (end of the 5<sup>th</sup> millennium BC, Fig. 1/a) is the ideal example. The results of the archaeological excavations were presented in preliminary reports (Marinescu-Bîlcu 1980; 1983) and a monograph (Marinescu-Bîlcu, Bolomey 2000). According to the latter (Marinescu-Bîlcu, Bolomey 2000), the osseous industry consisted of artefacts made of bone (96 items), antler (451 of *Cervus elaphus*,



**Figure 1.** Map of the main Cucuteni (magenta) and Precucuteni (white) sites mentioned in the text: 1. Drăgușeni – În deal la Lutărie; 2. Drăgușeni – Ostrov; 3. Berești – Dealul Bulgarului; 4. Berești – Dealul Băzanului; 5. Ruginoasa – Dealul Drăghici; 6. Costești – Cier; 7. Isaiia – Balta Popii; 8. Târgu Frumos – Baza Pătule; b – Magnetometric map of the site (after Kovács, Mischka 2024); c – the recalibrated  $^{14}\text{C}$  dates.

and two of *Capreolus capreolus*) and wild boar canine (12 items). Four studies were dedicated to the faunal remains and bone industry (Bolomey 1980; Bolomey, Marinescu-Bîlcu 1988), the antler industry (Mărgărit *et alii* 2020) and the wild boar tusk implements (Boroneanț, Mărgărit 2021).

## METHODOLOGY

The analytical criteria for the interpretation of the technological and functional marks were based on various methodologies from publications on the osseous industries in Prehistory (e.g. David 1999; Averbouh 2000; Provenzano 2001; Maignot 2003; Goutas 2004; Pétilion 2006; Tejero *et alii* 2012; Choyke, O'Connor (eds.) 2013; Vitezović 2016; Orłowska 2018; Altamirano Garcia, Alarcón Garcia (eds.) 2019).

For the purposes of this research, our attention focused mainly on the artefacts in the early stages of the technical transformation sequence, such as preforms, blanks and manufacturing waste. Most of these artefacts had been identified during the early stages of our research in the faunal assemblage and only few in the old osseous collection. They were identified anatomically and taxonomically and then inspected macroscopically for a correct characterization of the technological marks. Subsequently, the latter were analyzed using an Olympus stereomicroscope (magnification up to 90X) and a Keyence VHX-600 digital optic microscope using lenses of variable strengths between 30X and 100X. Thus, we were able to reconstruct the manufacturing process from raw material to the finished artefact.

## CULTURAL CONTEXT

The Cucuteni–Trypillian (C-T) complex spans ca 2000 years and is well-known mostly for its distinct, beautifully painted pottery and elaborate anthropomorphic and animal figurines. By 4500 cal BC it had extended over present-day Moldova, northeastern and eastern Romania, and western, central and southern Ukraine. Around 3000 cal BC things began to change, the settlements were abandoned, and archaeological evidence suggests the presence of nomadic steppe populations from the East.

The C-T site at Drăgușeni – Ostrov (Fig. 1/a) is located in northeastern Romania, on the Bașeu Plain, on the valley of the Podriga River. The twelve seasons of excavation between 1970 and 1985 uncovered an area of ca. 3200 m<sup>2</sup> with the total surface of the site estimated at ca. 8–9 ha. Twenty Chalcolithic houses were investigated and assigned to the A4 stage of the C-T cultural complex (according to the Romanian periodization). Other types of features included mainly storage and oven pits (subsequently used as refuse pits), as well as “ritual” pits. Pottery represented the predominant archaeological material. The excavations uncovered a significant number of lithic items (1177 chipped and 151 polished implements, and many debitage pieces) recovered both from secure archaeological contexts and the cultural layer. The ca. 4300 faunal remains indicated the presence of both wild and domestic species, predominantly mammals (3383 remains). Wild boar and deer were the best represented among the wild species, making ca. 95%. Domestic species included cattle, ovicaprids, pig and dog. The osseous industry is represented by bone, antler, and a few wild boar tusk artefacts.

Small finds consisted of anthropomorphic and zoomorphic figurines and various clay items. Four disarticulated fragmented human bones were also recovered from two houses, a pit and the cultural layer, respectively (Marinescu-Bîlcu, Bolomey 2000).

Recent magnetometric investigations (Kovács, Mischka 2024) at the site identified the location of the old excavations and suggested the presence of ca. 68 houses and probably two ditches (Fig. 1/b).

Three old radiocarbon dates exist (Kovács, Mischka 2024): Bln–1195: 5430±100 BP (4455–4042 cal BC); Bln–1060: 5355±100BP (4361–3970 cal BC); Bln–1194: 5205±100 BP (4259–3785 cal BC)<sup>1</sup> indicating the site was occupied most probably within the time interval of 4350–3950 cal BC (Fig. 1/c), corresponding roughly to the chronology of the A4 Cucuteni-Trypillia phase.

**The archaeological assemblage** that made the subject of our study consists of 129 modified pieces of *Cervus elaphus* antler and 101 mammalian bone artefacts (Table 1). This assemblage is not identical to the one in the monograph for two main reasons: 1. there was a substantial number of antler fragments previously classified as modified flakes but as

<sup>1</sup> Dates have been recalibrated using OxCal 20.

they did not show any technological marks, they were re-classified as faunal remains; 2. our study included artefacts previously unpublished.

Type	Antler	Bone
Waste	25	16
Blank	35	6
Preform	27	2
Finished piece	33	66
Undeterminate	9	11
<b>TOTAL</b>	<b>129</b>	<b>101</b>

*Table 1. Products and by-products of the technical transformation sequence for antler and bone.*

### **ANTLER**

**Debitage waste (n=25)** encompasses a few exceptional items - mainly beam fragments (n=7) (Fig. 2/a, d) – in what technological marks are concerned. Tines were eliminated by multiple procedures: percussion, bending or sawing (Fig. 2/e). Longitudinal bipartition by double grooving (Fig. 2/b–c, f) and, in one case, by percussion, were also observed.

The basal area of a shed antler (Fig. 2/g) shows numerous marks indicating that several blanks were obtained from it. The basal tines were segmented by percussion (Fig. 2/h) around the entire circumference first and were fully detached by bending. Then, the beam was bipartitioned longitudinally by double grooving (Fig. 2/i) and transversal percussion, thus resulting a flat blank. On one side of the artefact, two grooves are suggestive of an unfinished procedure aiming at extracting a second, much narrower blank. Below them there are marks resulting from an abandoned attempt to segmentation by percussion (Fig. 2/j). The artefact may be thus considered an intermediate blank (preserving the volume in some areas and flat in others).

Another interesting specimen consists of a fragment from the upper part of the beam (Fig. 3/a). The three existing tines were segmented by percussion (Fig. 3/b) with the detachment carried out by percussion. A small blank was then detached from the beam by a combination of grooving (Fig. 3/c) and indirect percussion.

This procedure of obtaining blanks by extraction is very well illustrated by another beam fragment (Fig. 3/d), fractured unfortunately at both ends. Two converging grooves were cut on its surface (Fig. 3/e–f) to extract the blank shaped like a narrow rod, but the procedure was abandoned.

A basal fragment of a shed antler (Fig. 3/g) was segmented by percussion (Fig. 3/h–i) around the entire circumference and subsequently detached by bending. Percussion was also used for the segmentation of the basal tine of the antler. Differently, on a similar fragment, tines were segmented by percussion applied on various concentric points, followed by bending. In this case, the segmentation procedure of the beam remains obscure because the item fractured at both ends. A clear case of debitage waste is represented by another beam fragment also fractured at both ends, which again prevented the identification of the segmentation procedure. Longitudinal debitage was then used for the extraction from the compact tissue of a rod-shaped blank.

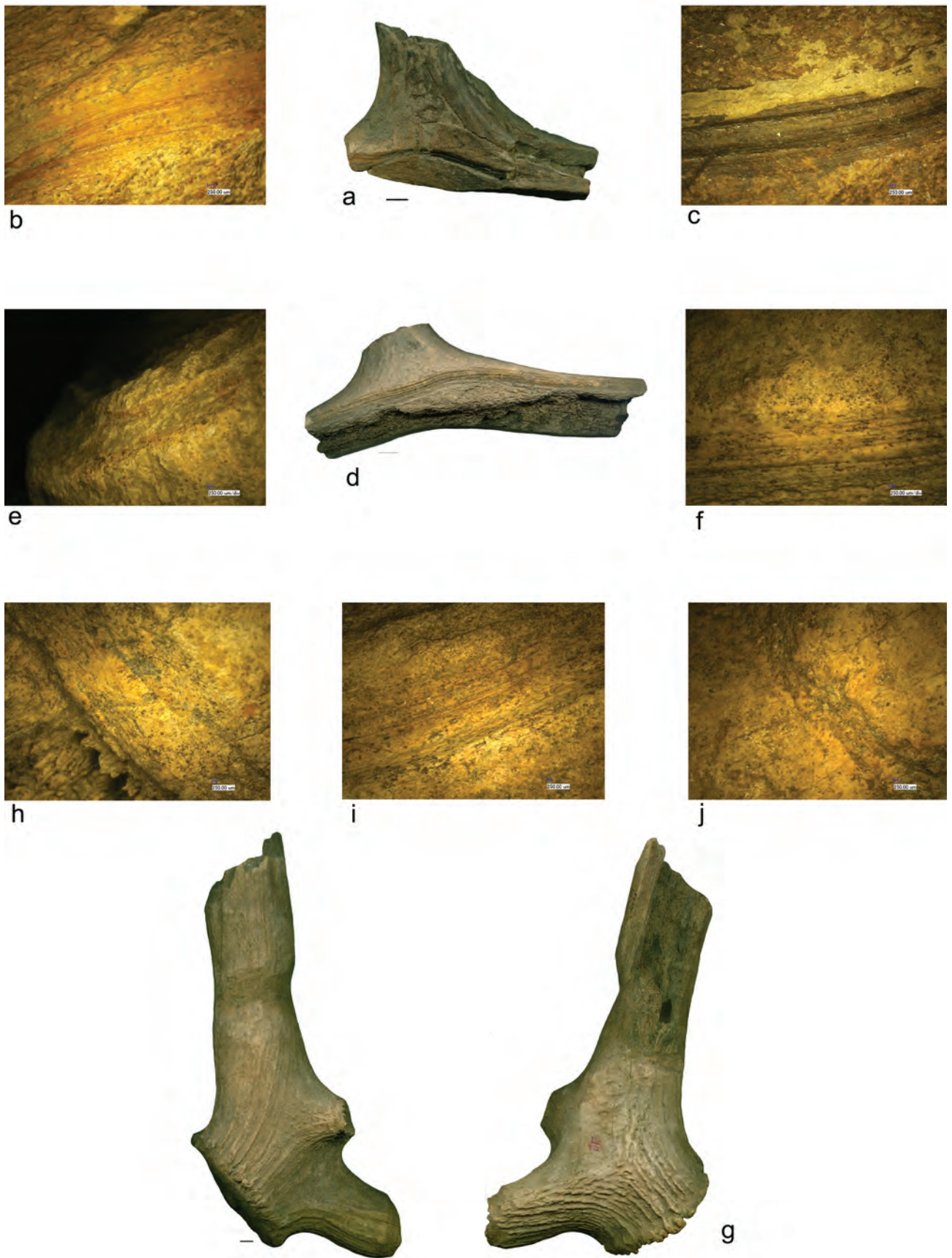
A red-deer skull fragment suggests that the detachment of the burr was carried out by percussion around the entire circumference, followed by bending. It is not a singular find. Another skull fragment was detached in the described manner (Fig. 3/j), after the removal by bending of the basal tine, bipartition by double-grooving (Fig. 3/k–l) advancing from the beam area along the basal tine followed.

A similar third case illustrates the segmentation of the basal tine using a combination of percussion and bending. The presence of such pieces detached from the neurocranium suggest hunting of male deers took place from August through March (Schmid 1972, p. 90).

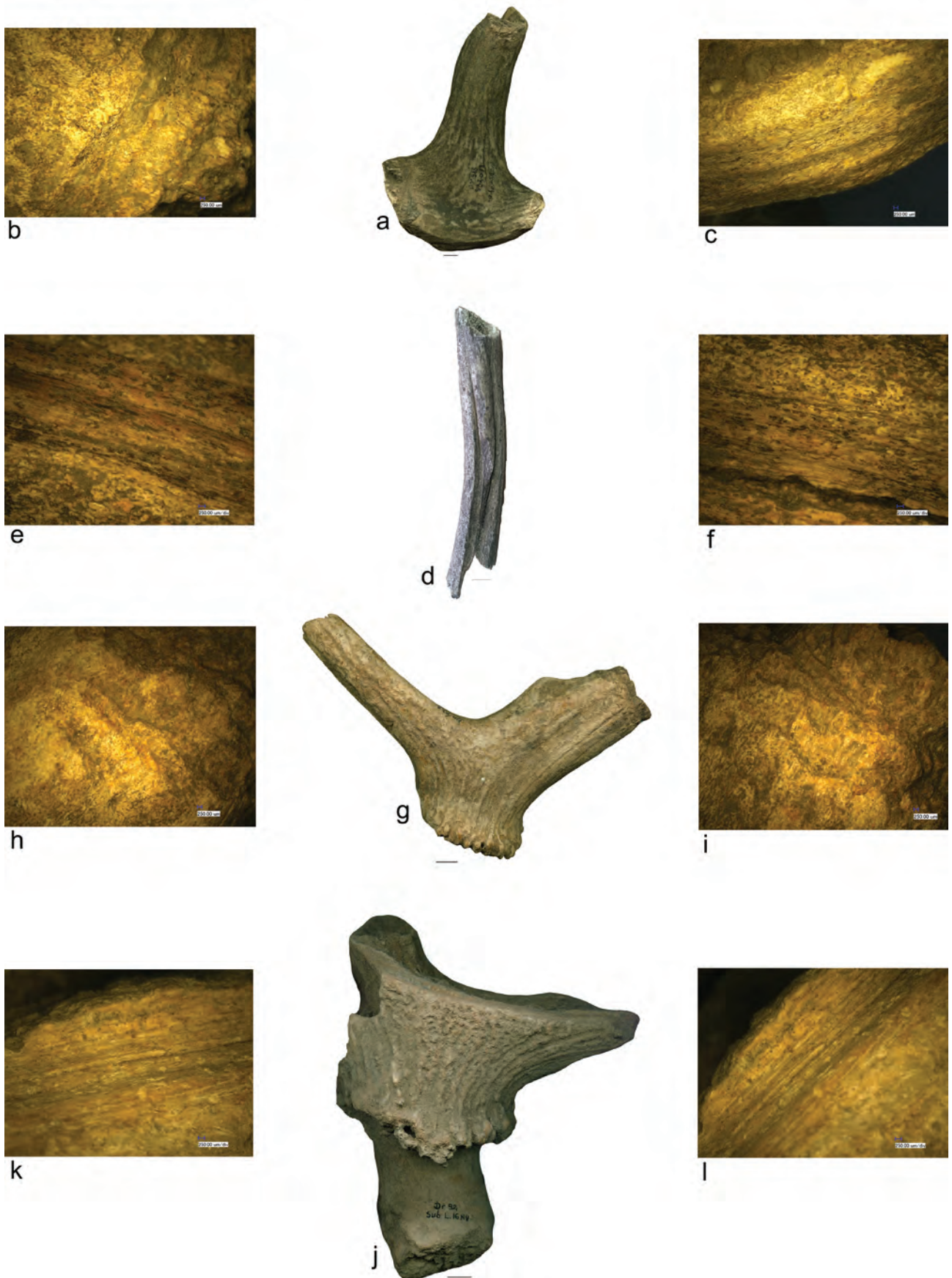
Other artefacts on massive beams included two almost intact burrs of shed antlers (Fig. 4/a). The basal tines were removed negligently by a combination of percussion applied on various concentric areas of the circumference and subsequently by bending. The median tine was segmented by sawing (applied around half of the circumference), and detached also by bending, which resulted in an irregular fracture (Fig. 4/b).

### **Blanks (n=35)**

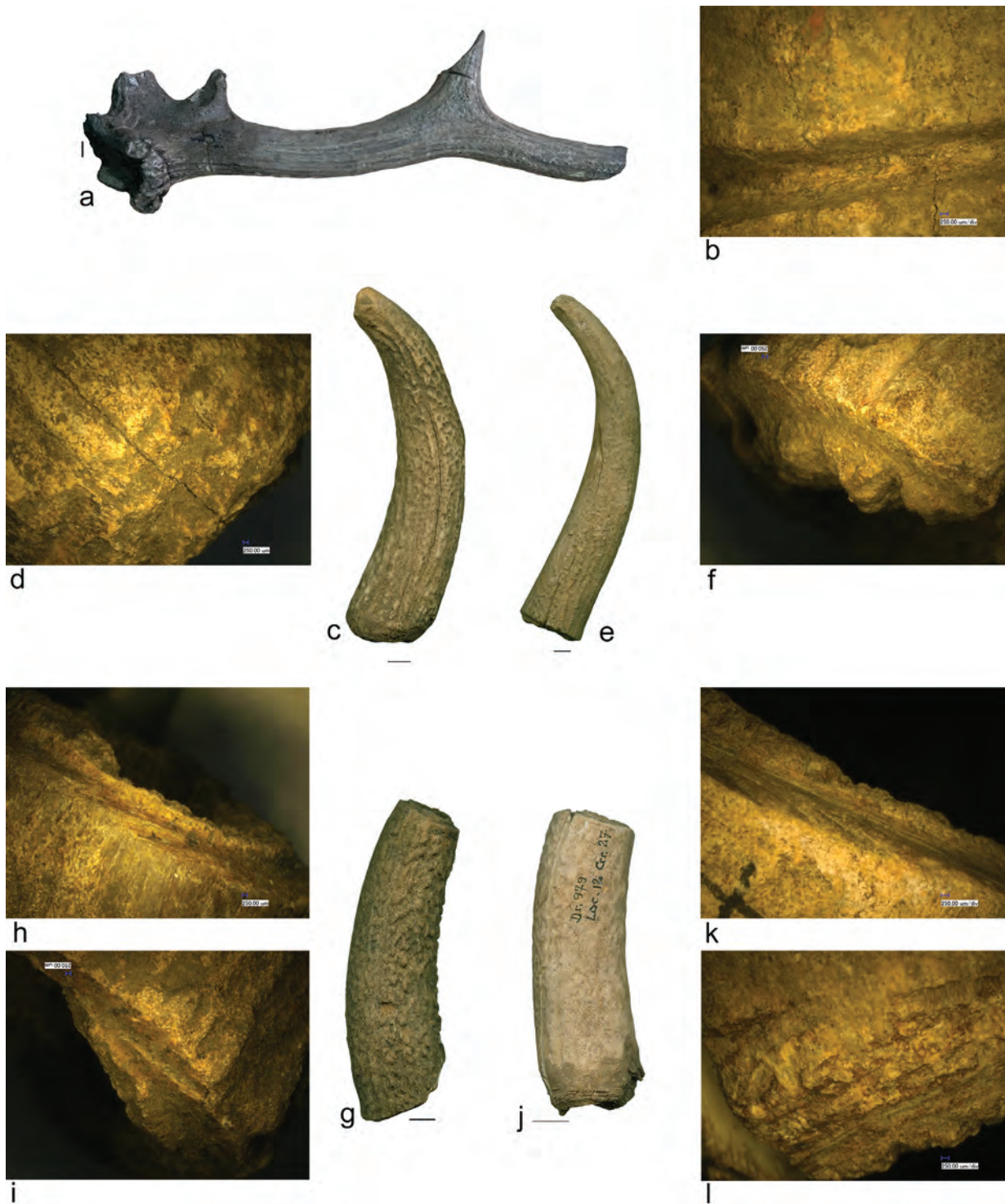
Blanks display the technical and morphological characteristics that allow them to be turned into finished items, whereas debris fragments do not. Twenty tine fragments were thus identified as blanks. They preserve the anatomical volume of the antler, and some (Fig. 4/c) were segmented from the branch by percussion (Fig. 4/d) on variable concentric



**Figure 2.** a, d, g: debitage waste (scale = 1 cm); b–c, f, i: marks of bipartition by double grooving; e: marks of segmentation by sawing; h, j: marks of segmentation by percussion.

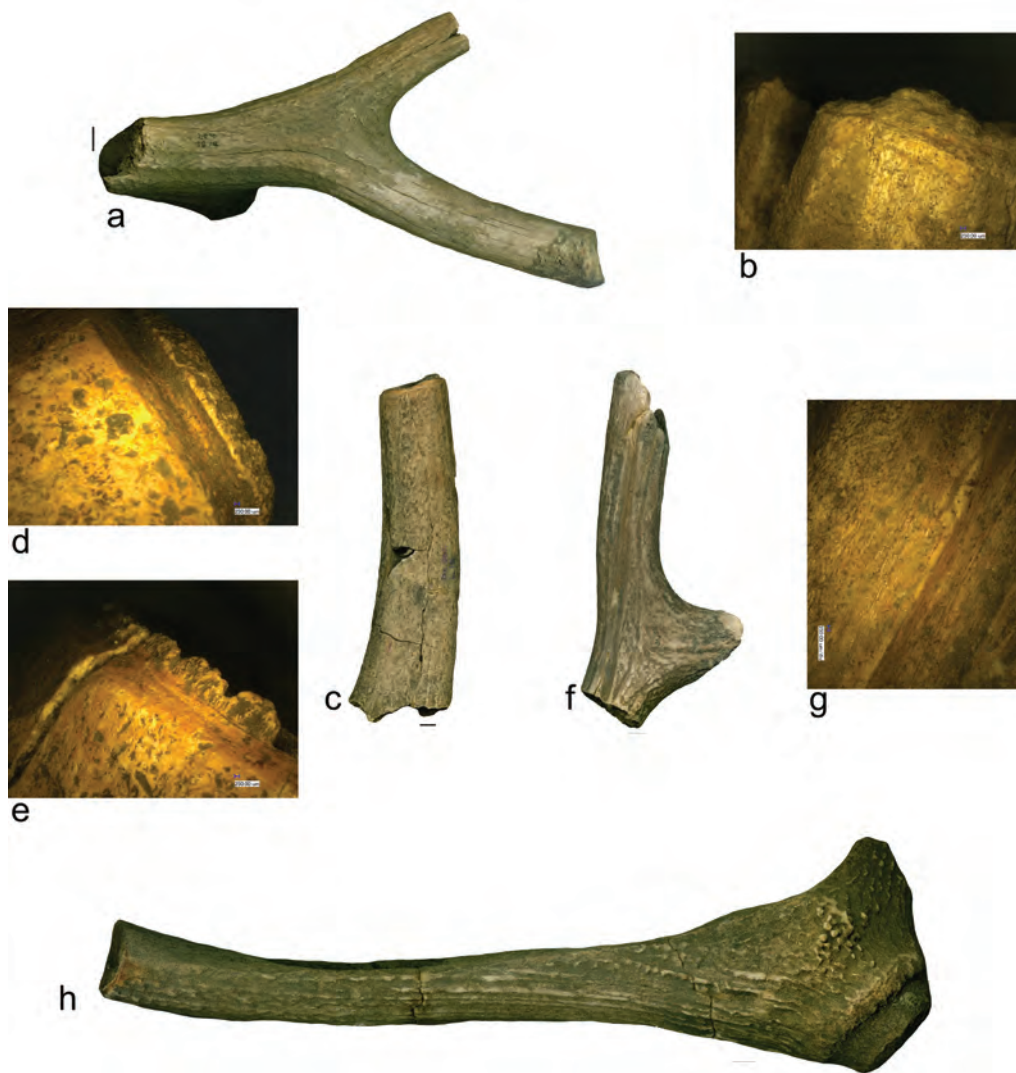


**Figure 3.** a, d, g, j: debitage waste (scale = 1 cm); b, h–i: marks of segmentation by percussion; c, e–f, k–l: marks of bipartition by double grooving.



**Figure 4.** a: debitage waste; b, f, h–i, k: marks of segmentation by sawing using abrasive fiber; c, e, g, j: volume blanks; d, l: marks of segmentation by percussion.

spots along the circumference of the piece. Other tines (Fig. 4/e) were detached by segmentation using abrasive fiber and detached by bending which generated the serrated morphology of the extremity (Fig. 4/f). There are also tines (Fig. 4/g) where segmentation by abrasive fiber was applied to both ends (Fig. 4/h–i), as well as items (Fig. 4/j) where one end was detached by sawing (Fig. 4/k), while the other end was segmented by percussion (Fig. 4/l). No other technological interventions were noted.



**Figure 5.** a, c, f, h: volume blanks; b, d–e: marks of segmentation by sawing using abrasive fiber; g: marks of bipartition by grooving.

On six beam fragments from the upper area of the crown various types of marks were observed. The tip of one beam (Fig. 5/a) was segmented using abrasive fiber and may have been used later to obtain a finished artefact (Fig. 5/b). Segmentation was the only technological intervention observed. Another beam showed bending marks only. Although a third beam fragment displays a fresh fracture, only a tine fragment with marks resulting from the use of abrasive fiber is preserved. Two other fragments indicate both tines were segmented either by percussion on variable areas of the circumference, followed by bending, or by sawing. The ends of the last item (Fig. 5/f) exhibit post-depositional fractures, making the segmentation procedure impossible to determine. It was also visible on both sides of the beam that longitudinal bipartition by double grooving (Fig. 5/g) was started but not completed.

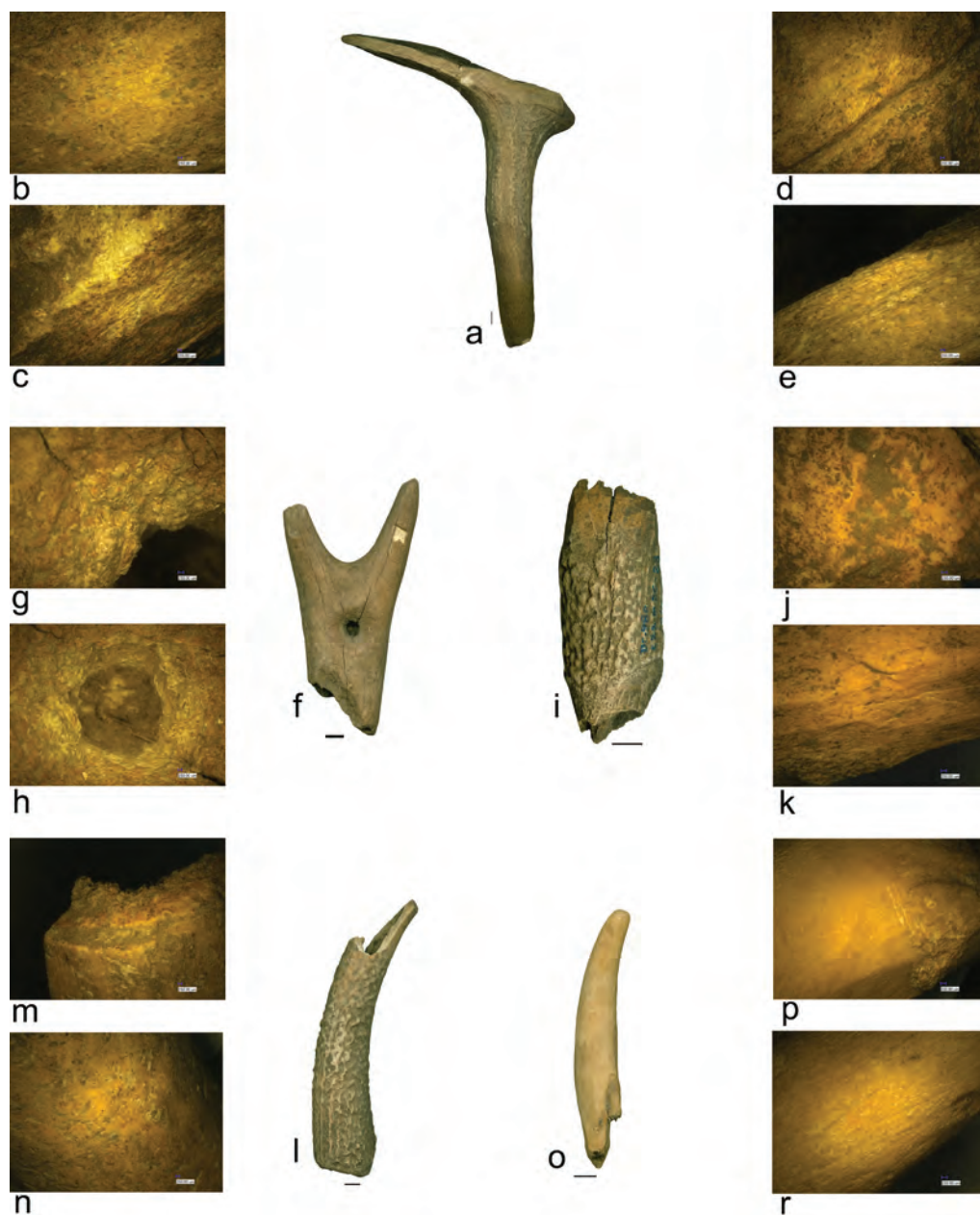
Three other beams (Fig. 5/c) show post-depositional fractures at one end while at the other end segmentation was carried out using abrasive fiber (Fig. 5/d–e) and detachment was obtained by bending (2 items) and percussion (1 item). The artefacts preserve the anatomical volume of the antler.

The beam of a shed antler was segmented by percussion applied around its entire circumference, with detachment also achieved through percussion. Both basal tines were removed using the same method. Another beam of shed antler (Fig. 5/h) shows bipartition by double grooving, followed by detachment through indirect percussion. In this case, the basal tine was eliminated by bending. The morphology of this blank indicates it was intended for an artefact of the recipient or container type.

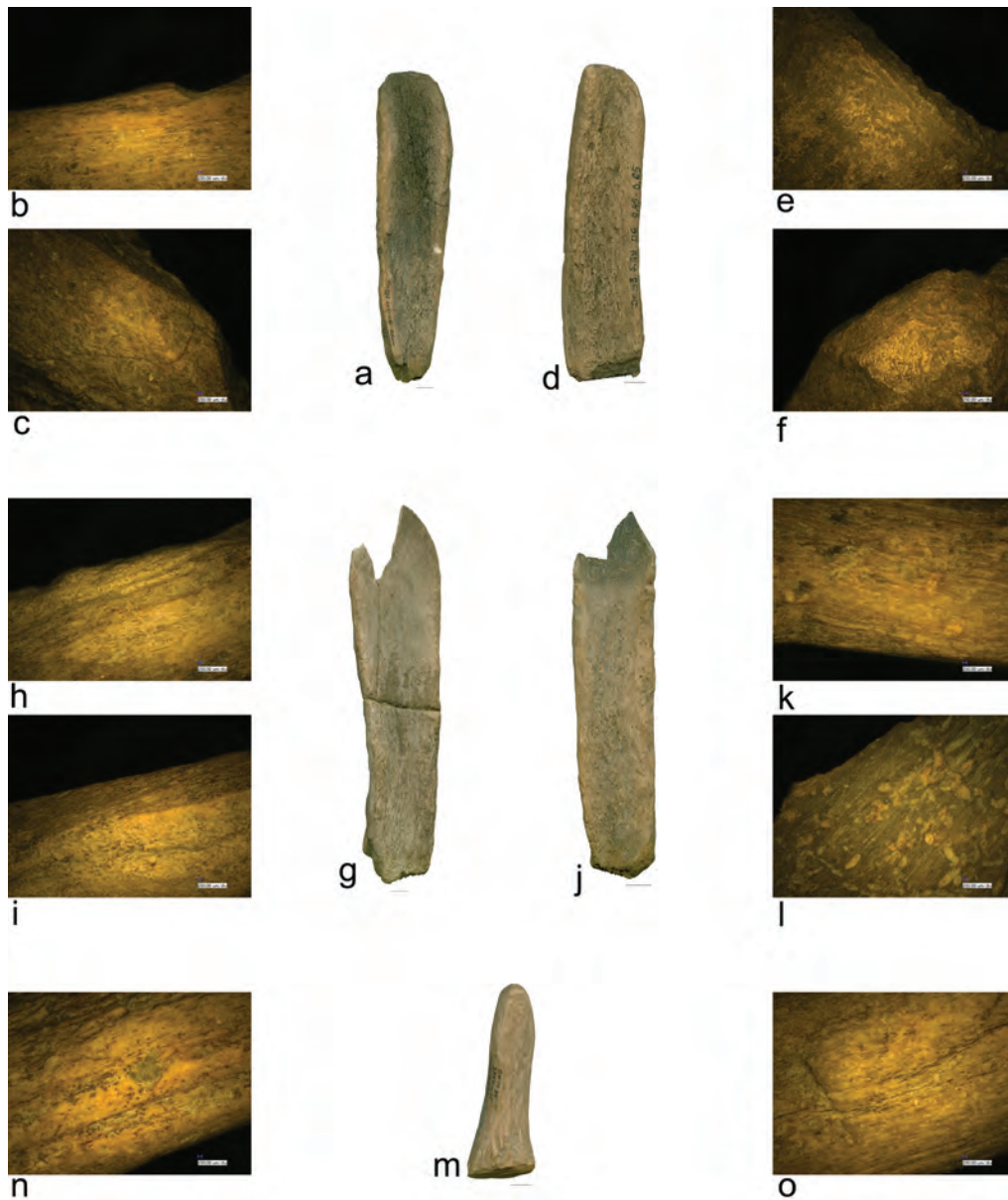
**Preforms (n=27)**

A preform (Fig. 6/a) was produced on an intermediate blank originating from the junction of the axis and a tine, the latter recently fractured at its tip. On the meso-proximal area of the artefact, traces of pearling removal by cutting (Fig. 6/b) remain visible. The preserved beam was detached at one end by percussion (Fig. 6/c) and at the other by bending. It was then longitudinally bipartitioned through double convergent grooving (Fig. 6/d–e), with the process completed by indirect percussion. No active front was created, and the item was abandoned at this stage of the operational sequence. A similar piece, fractured at the tine, was obtained by longitudinal bipartition of the beam using percussion, with the tine subsequently trimmed at the top by scraping.

A second preform (Fig. 6/f) utilised a fragment comprising the beam and tines from the upper branch area. The blank was segmented by percussion (Fig. 6/g), followed by bending. On the mesial area, a perforation initiated by percussion (Fig. 6/h) from both faces remained unfinished, with drilling more advanced on one side. Four tines were segmented by percussion, around the entire circumference. In one case, a blow was struck in the tip area triggering the detachment of a



**Figure 6.** a, f, i, l, o: preforms with anatomical volume; b, k: marks left by the removal of the pearling by cutting; c, g, j, p: marks of segmentation by percussion; d–e: marks of bipartition by grooving; h: detail of the unfinished perforation; m: marks of segmentation by sawing using abrasive fiber; n, r: marks left by the removal of the pearling by scraping.

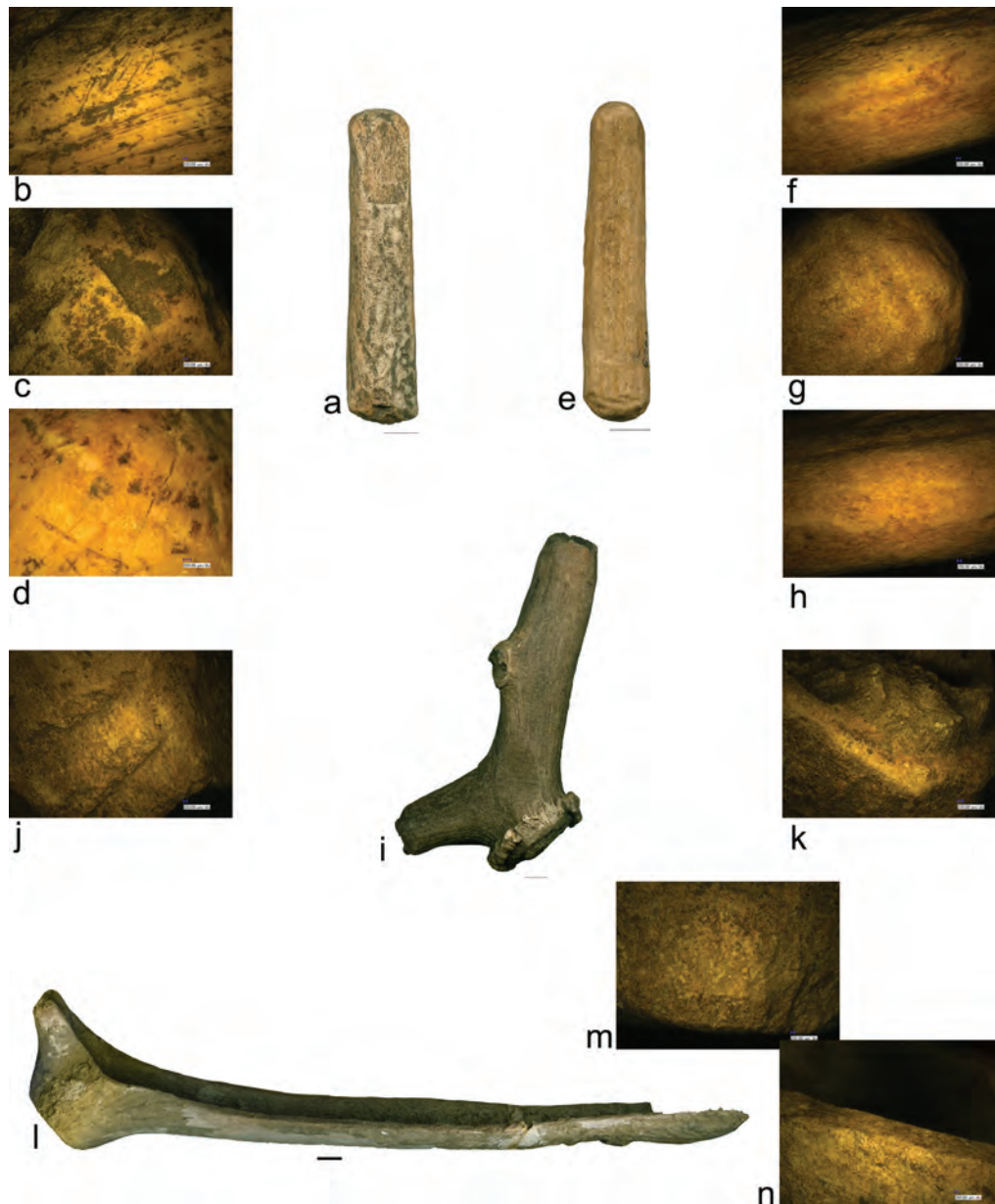


**Figure 7.** a, d, g, j, m: preforms; b, h, n: marks of bipartition by grooving; c, f, i-k: marks left by the removal of the pearling by cutting; e: segmentation by percussion; l, o: scraping marks.

flake. A working surface was created in view of obtaining an active chisel-type front. Another tine (Fig. 6/i) was segmented at both ends by percussion (Fig. 6/j), followed by bending. Subsequently, the pearling was removed by cutting (Fig. 6/k). A preform variant is showed in Fig. 6/l: the tine was segmented by percussion around the entire circumference at the base. At the tip, traces of segmentation by abrasive fiber are also visible (Fig. 6/m). At the resulted distal end, shaping by scraping (Fig. 6/n) was carried out aiming to regularize the existing surface. At two other preforms – on tine segments - transversal segmentation was carried out by cutting using abrasive fiber at both ends. The surface was regularized, on variable surfaces, by longitudinal scraping.

Three additional tine fragments (Fig. 6/o), although exhibiting heavily degraded surfaces, still retain marks indicating prior shaping. The volume blank was segmented by percussion (Fig. 6/p), applied to approximately one-fourth of the surface and followed by bending (in one specimen), abrasive fibre sawing (in a second), or simple fracture (in a third). Subsequently, the entire surface of the tines was scraped (Fig. 6/r).

A distinct category comprises five preforms on beams intended for manufacturing bevelled tools (Fig. 7/a, d). These were produced on flat blanks obtained through bipartition by double grooving (Fig. 7/b). Transversal segmentation was



**Figure 8.** a, e, i, l: preforms; b, f: debitage by grooving, c, g, j: segmentation by percussion; d: abrasion marks; h, n: cutting marks; k: segmentation by sawing; m: shaping by percussion.

achieved by percussion (Fig. 7/e), after which the debitage edges were slightly adjusted using percussion (Fig. 7/c). Towards the extremities, percussion was again applied (Fig. 7/f) to create the convergent edges and active front characteristic of this typological group. These items remained unfinished. Following a similar technological sequence, spoon preforms appear to have undergone the same transformation process (Fig. 7/g, j). These blanks were also flat, obtained by longitudinal bipartition through double grooving (Fig. 7/h), with segmentation performed by percussion. The debitage edges and the upper surface were shaped using *taille au canif* (Fig. 7/i, k). Finally, delineation was achieved by cutting two bilateral grooves to mark the starting point of the receptacle, followed by longitudinal scraping (Fig. 7/l) on the lower surface.

A preform was obtained from a beam (Fig. 7/m) by grooving applied on three sides (Fig. 7/n), resulting in a flat blank as expected. Bilateral scraping was initiated on the active front but left incomplete (Fig. 7/o).

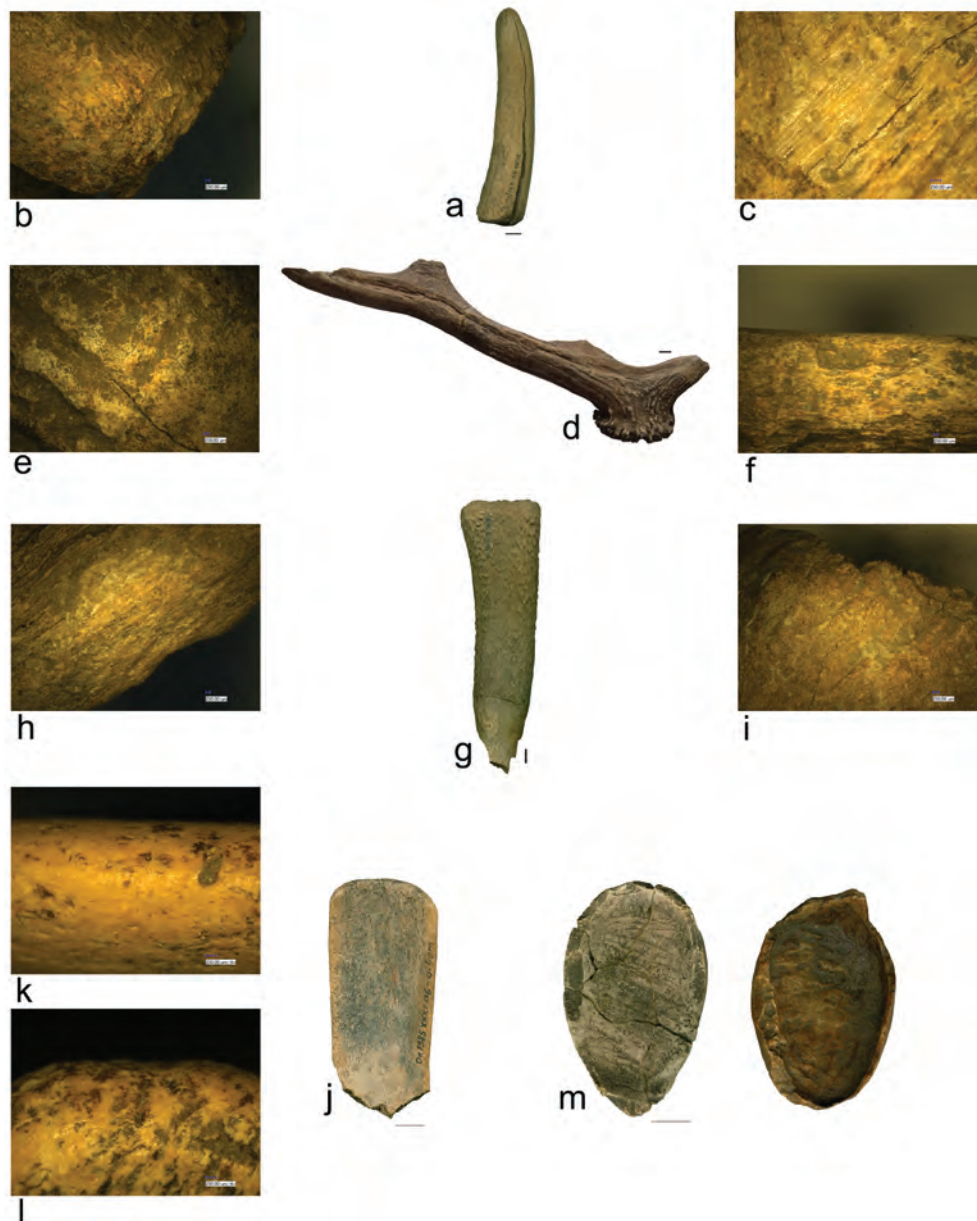
The same extraction method using grooving (Fig. 8/b, f) was employed to produce two rods (Fig. 8/a, e), as indicated by their narrow breadth. Segmentation was achieved through percussion combined with bending (Fig. 8/c, g). On the first specimen, the extremities began to be regularised by abrasion (Fig. 8/d), while on the second, by cutting (Fig. 8/h).

The basal area of a shed antler (Fig. 8/i) was also utilised as a preform. The first beam was segmented by percussion applied around the entire circumference, followed by bending, and the second by sawing with abrasive fibre (Fig. 8/k). Another beam was segmented by indirect percussion around the entire circumference (Fig. 8/j). A perforation was initiated on the basal area by bifacial percussion, but the process remained unfinished.

Another basal area of a shed antler was intended for transformation into a container (Fig. 8/l). The initial debitage operation was similar to that illustrated in Fig. 5/h. Subsequent shaping procedures included regularising the debitage edges by cutting (Fig. 8/n), smoothing the basal surface by percussion (Fig. 8/m), and removing the spongy tissue.

#### **Finished pieces (n=33)**

The main typological categories identified are pressure flakers (n = 12), bevelled tools (n = 11), spoons (n = 6), and containers (n = 4). *Pressure flaker* blanks (Fig. 9/a) were produced on tines. The original volume was largely preserved, and detachment was achieved by percussion (Fig. 9/b) applied around the entire circumference, followed



**Figure 9.** a: pressure flakers; b, e: segmentation by percussion; c: use-wear marks; d, g: bevelled tool; f, i: shaping of the functional end by percussion; h: marks of bipartition by percussion; j: spoon; k-l: abrasion marks; m: containers.

either by a combination of percussion and bending or directly by bending. Percussion marks remain visible, indicating that the segmentation edge was not regularised. In one specimen, the surface was shaped by abrasion, but no other technological interventions were observed. The presence of use-wear traces (Fig. 9/c) enabled functional classification as pressure flakers.

*Bevelled tools* (n = 11) were manufactured on both volume blanks (n = 8) and flat blanks (n = 3). Four specimens were made from beams, while the remaining seven were produced on tines. One beam specimen originated from a shed antler of *Cervus elaphus* (Fig. 9/d). All basal and median tines were removed by percussion (Fig. 9/e), leaving only the beam. Final detachment was also performed by percussion. A groove created along the entire length of the antler facilitated longitudinal bipartition, although the operation was not completed. The method used to remove the burr remains unknown; however, the functional end was formed by oblique percussion (Fig. 9/f) without subsequent surface shaping. For the other two beam-based items, the segmentation procedure could not be determined, but the active end was created by percussion.

One final massive specimen was produced from the basal area of an antler detached from the skull by percussion. The basal tines were removed by bending. At the proximal end, an oblique perforation was drilled relative to the longitudinal axis of the piece, initiated by bifacial percussion and completed by bifacial rotation. At the fractured distal end, part of the peripheral active area remains, indicating it was shaped by unifacial percussion. The percussion plane was subsequently regularised by abrasion.

For bevelled tools made on tines, the segmentation method was identified for only one specimen (on a volumetric blank): percussion combined with bending. The bevelled front was shaped by longitudinal scraping, either unifacial (three items) or bifacial (one item).

The three flat blanks were produced through longitudinal bipartition by percussion (n = 2) (Fig. 9/g–h) or by double grooving (n = 1). The procedures for transversal segmentation could not be determined. The active front was formed either by percussion (n = 2) or scraping (n = 1) (Fig. 9/i).

*Spoons* (n = 6) (Fig. 9/j) are characterised by a receptacle continuing into a narrower segment forming the handle. All specimens were made on flat blanks derived from beam segments and are fractured at the proximal end (handle). The longitudinal bipartition technique cannot be identified because the edges were regularised by abrasion (Fig. 9/k–l). The active front was shaped by cutting, followed by abrasion. The inferior surface was completely cleaned of spongy tissue and regularised by longitudinal scraping; in one case, the exterior surface was also scraped.

*Containers* (n = 4) were manufactured from the basal area of shed antlers (peduncle/burr) (Fig. 9/m). All specimens are fractured. A blank and a preform described earlier provide clues to the manufacturing process: the basal area was trimmed by percussion and then scraped, with all spongy tissue removed by scraping.

## BONE

### *Debitage waste (n=16)*

A deer metatarsus (most likely, Fig. 10/a) provides the clearest example of the bone debitage method. Longitudinal bipartition was initiated by indirect percussion (Fig. 10/b), exploiting the natural median depression. The process was not completed, probably because the bone fractured transversely and became unusable. The same bipartition technique, this time by grooving (Fig. 10/c), is visible on a cattle metatarsus fragment. The groove was also started along the median depression (Fig. 10/d), but again the procedure remained unfinished.

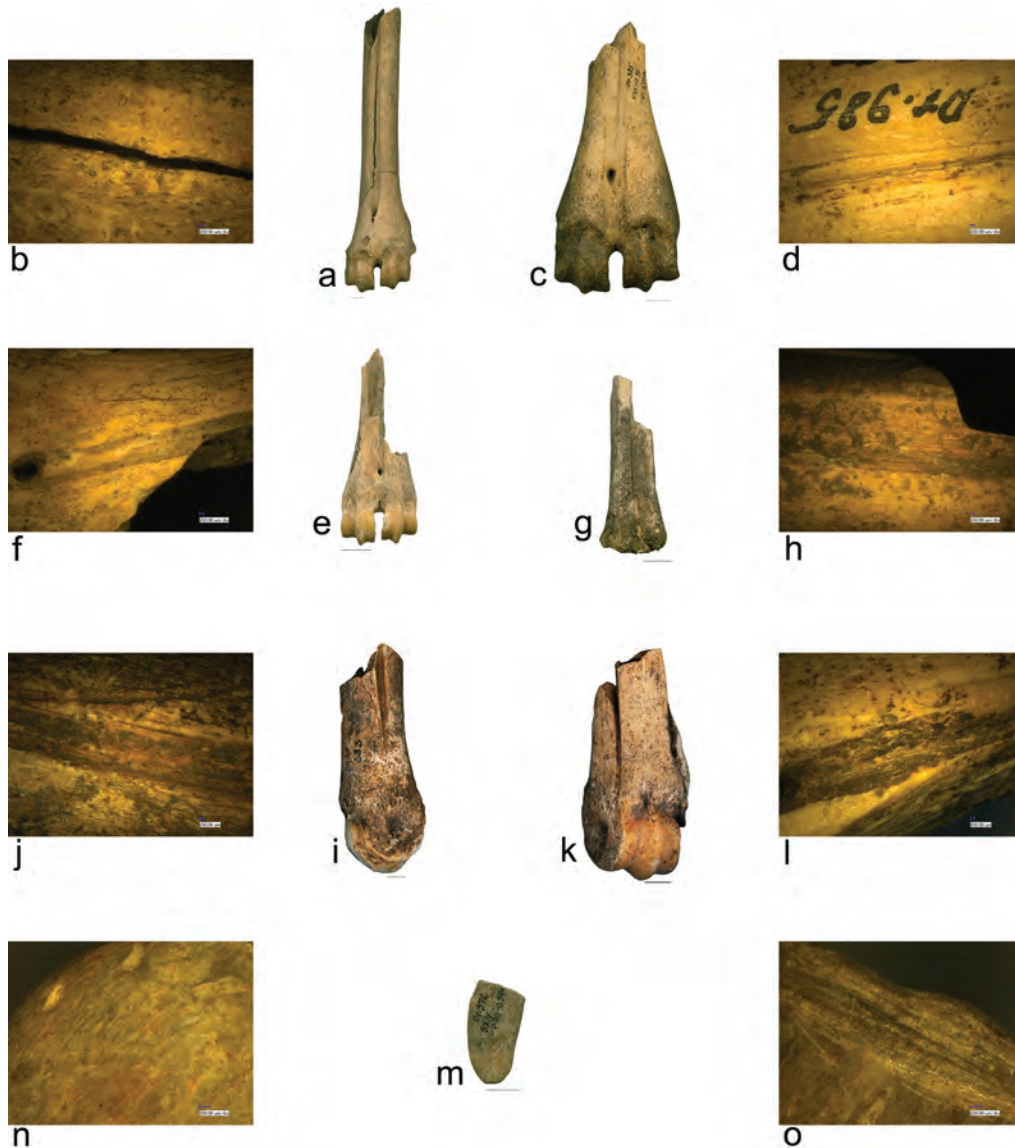
On two debitage waste pieces (Fig. 10/e, g), traces of longitudinal bipartition by double grooving (Fig. 10/f, h) were observed. These were classified as debris, likely because the attempt to separate the two blanks by indirect percussion was made premature—before the groove was sufficiently deep—resulting in fracture and abandonment.

Longitudinal debitage by *quadri*-partition was identified on two epiphyses (Fig. 10/i, k). Initially, the bone was bipartitioned longitudinally by double grooving, after which a new groove was added to produce blanks representing one-quarter of the original bone diameter (Fig. 10/j, l). Similar techniques—bipartition (n = 4) and *quadri*-partition (n = 5) by double grooving—were noted on other bone fragments as well.

One final debris item is noteworthy because it represents a fragment of a finished piece (Fig. 10/m). The artefact was produced on a flat blank. The original debitage procedures cannot be determined, as the inferior face and the proximal end—with a rounded morphology—were thoroughly abraded (Fig. 10/n). The surviving fragment was detached from the initial implement by sawing and bending (Fig. 10/o). It is plausible that the original item fractured during use and was subsequently repaired.

### *Blanks (n=6)*

A flat blank from an ovicaprid metatarsus was produced by longitudinal bipartition using double grooving, but no subsequent shaping was applied. Some blanks were obtained through *quadri*-partition, which involved double grooving



**Figure 10.** a, c, e, g, i, k, m: debitage waste; b: marks of bipartition by percussion; d, f, h: marks of bipartition by grooving; j, l: marks of quadri-partition by grooving; n: abrasion marks; o: segmentation by sawing.

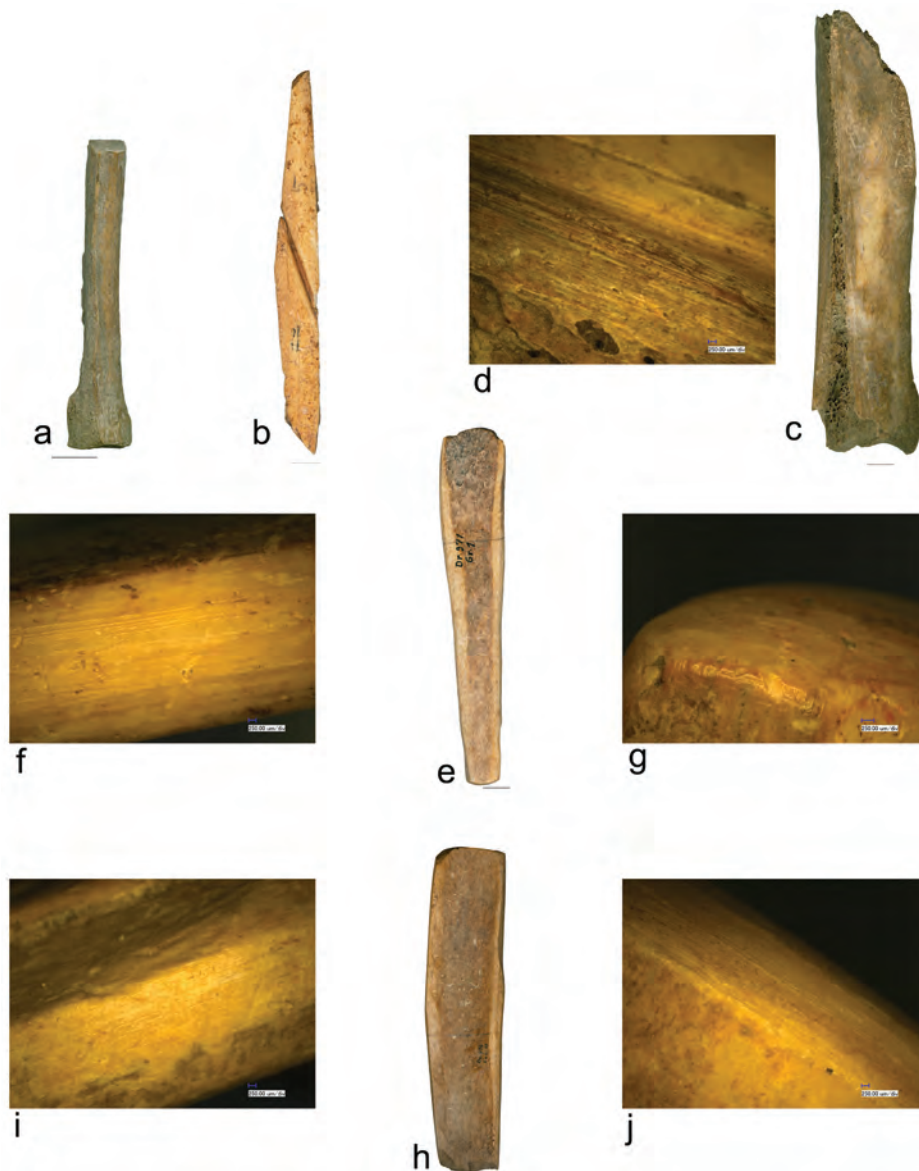
followed by indirect percussion for complete detachment (Fig. 11/a). In another instance, *quadri*-partition was achieved entirely by percussion (Fig. 11/b), with segmentation initiated by grooving on the exterior surface.

An interesting category of blanks was made from *Bos taurus* scapulae (Fig. 11/c), intended for the manufacture of future scrapers. In two specimens, segmentation by double grooving was initiated (Fig. 11/d), but complete detachment was finalised in only one case, using indirect percussion.

**Preforms (n=2)** include two unfinished spoons (Fig. 11/e, h). The blank is flat, obtained by bipartition either in double grooving (Fig. 11/f) or percussion. Segmentation was carried out by percussion. Regularization by abrasion of the ends and the debitage edges had been started but not completed (Fig. 11/g, i-j).

#### **Finished pieces**

Pointed tools (n = 43), spoons (n = 9), scrapers (n = 6), bevelled tools (n = 6), and handles (n = 2) were produced from this raw material. Pointed tools constitute the most significant typological category. Among the specimens where the debitage technique could be identified, the majority (n = 21) were made on flat blanks (Fig. 12/a), primarily through

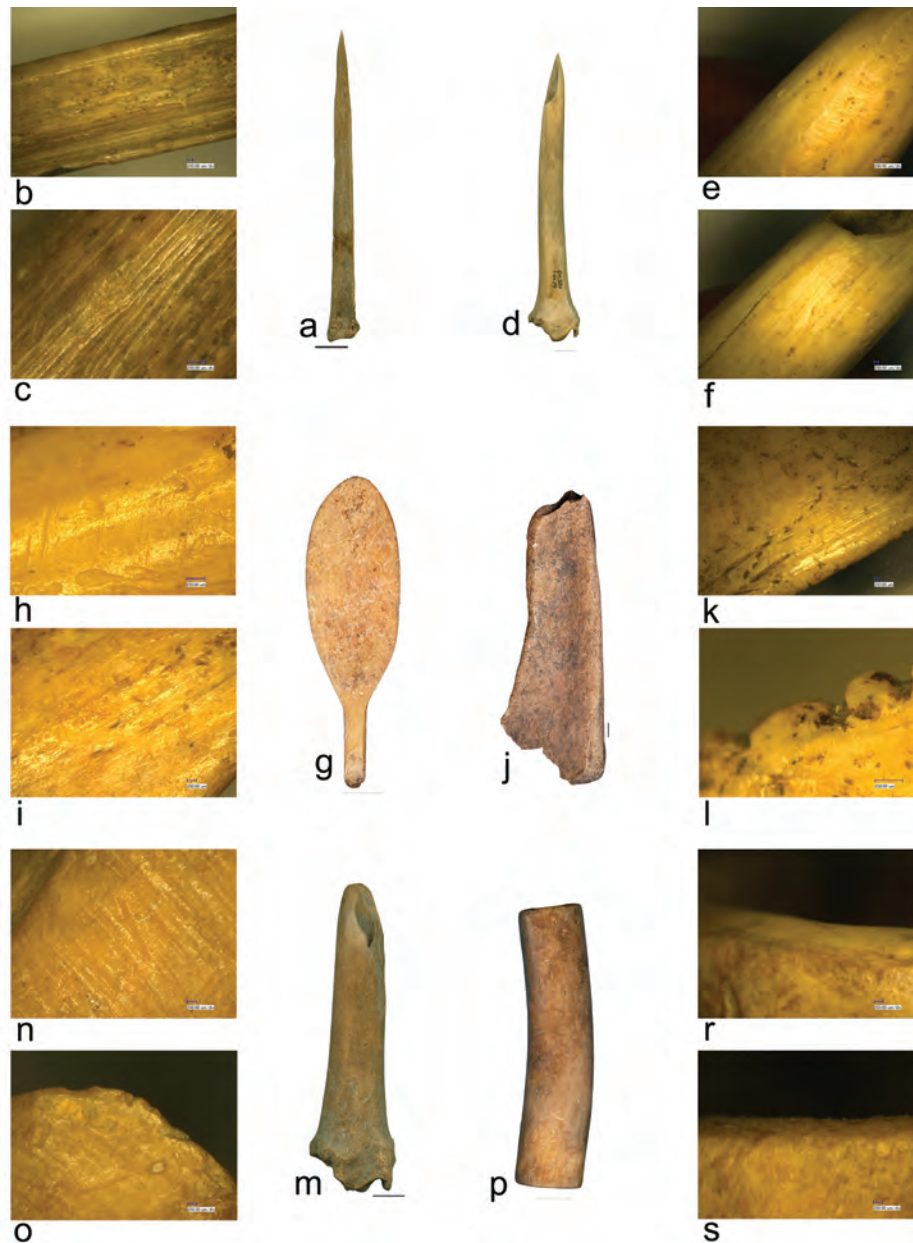


**Figure 11.** a, b, c: blanks; d: marks of segmentation by grooving; e, h: preforms; f: marks of bipartition by grooving; g, i-j: abrasion marks.

*quadri*-partition using double grooving (Fig. 12/b), and less frequently by bipartition with the same method. Some examples were produced from flakes of the diaphyseal wall obtained by direct percussion. In most cases, the debitage edges remained unshaped, with abrasion applied only to a few specimens, possibly intended as spear points. Ten specimens were made on volumetric blanks (Fig. 12/d). At the distal end, the tip was formed by abrasion, scraping, or a combination of both techniques (Fig. 12/c, e–f). The proximal end was abraded in only a few cases.

*Spoons* (Fig. 12/g) were manufactured on flat blanks extracted by longitudinal bipartition. The specific techniques could not be determined, as the debitage edges were regularised by longitudinal scraping or abrasion (Fig. 12/h). The inferior surface was cleaned of spongy tissue through longitudinal scraping (Fig. 12/i). In specimens ending in a thin rod serving as a handle, the circular or oval receptacle was shaped by longitudinal scraping, followed by abrasion.

*Scrapers* (Fig. 12/j) made on *Bos taurus* scapulae represent an interesting typological category. The active front was created by cutting through bifacial grooving (Fig. 12/k), continued until the wall was sufficiently thinned, and then completed by bending. In one specimen, small notches were added by sawing (Fig. 12/l) to enhance the efficiency of the active front. A single specimen shows segmentation by sawing at one end only, leaving visible marks.



**Figure 12.** a, d: pointed tools; b, k: marks of bipartition by grooving; c, f, i: scraping marks; e, h, n-o, s: abrasion marks; g: spoon; j: scraper; l: notches; m: bevelled tools, p: handle; r: marks of segmentation by sawing.

*Bevelled tools* (Fig. 12/m) were produced on both flat and volumetric blanks. The flat blank was obtained by bipartition using percussion; in a few cases, the procedure could not be determined. Debitage edges were adjusted by scraping in some specimens only. The active end was finished by abrading the extremity. In two pieces made on volumetric blanks, the active front was formed by percussion, followed by abrasion of the percussion plane (Fig. 12/n-o).

*Handles* (Fig. 12/p) were crafted from the diaphyses of large mammal long bones, segmented by sawing (Fig. 12/r) at both ends. In one specimen, the segmentation plane was further regularised by abrasion (Fig. 12/s).

## DISCUSSION

### *Raw materials*

Evidence from the previous sections indicates that most antler material originated from shed antlers, while fewer cases involving antlers attached to skulls suggest hunting activities. Bolomey and Marinescu-Bîlcu (2000) observed that

over 80% of antler remains in their studied collection derived from shed antlers. Red deer ranks second among faunal species after wild boar, supporting the local origin of antlers cut from skulls (Bolomey, El Susi 2000). Only a small proportion of bone from these hunted species was utilised—for example, the *Sus scrofa* fibula and the *Cervus elaphus* metatarsus—appearing in the assemblage either as finished tools (such as pointed implements and spoons) or as blanks and waste. Among domestic species, bones from large mammals (e.g., *Bos taurus*) were preferred over those from medium-sized species (*Ovis aries/Capra hircus*). Overall, both wild and domestic specimens reveal a selective use of certain bones for specific typological categories, such as scapulae for scrapers. Unfortunately, most artefacts were produced from the diaphyseal wall through longitudinal debitage, making species identification impossible at simple visual inspection.

#### *Technical transformation sequence*

Antler processing at Drăgușeni produced three types of blanks: volumetric, flat, and intermediate (a blank from which a flat fragment was extracted while the remaining antler retained its anatomical volume). There is a clear preference for volumetric blanks (n = 77), compared to flat (n = 30) and intermediate (n = 13). In some cases, object fracturing made it impossible to identify the blank type.

Analysis of debitage products (blanks and debris) and finished pieces revealed two main detachment procedures: transversal debitage, initiating a segmentation sequence, and longitudinal debitage, initiating bipartition and extraction sequences. For transversal debitage, the techniques identified include direct percussion (61 specimens—likely underrepresented due to fractured extremities), segmentation by abrasive fibre (22 specimens), segmentation with a flint tool (2 items), and bending (16 items, applied exclusively to remove tines). For longitudinal debitage, grooving is the predominant technique (20 items), followed by percussion (9 items). During the extraction sequence (7 items), only grooving was employed.

Bone processing involved two blank types: volumetric and flat. Unlike antler, there is a marked preference for flat blanks (n = 74) over volumetric ones (n = 23). Detachment procedures included transversal debitage, triggering segmentation sequences mainly associated with volumetric blanks, and longitudinal debitage, which enabled multiple operations: *quadri*-partition, bipartition, removal by percussion, and shaping (as seen on the abraded astragalus). For transversal debitage, techniques include direct percussion (6 items), grooving (8 items), and sawing (4 items). For longitudinal debitage, double grooving dominates (42 items), used in both *bi*- and *quadri*-partition, followed by percussion (10 items) and combined grooving and percussion (5 items).

Correlating the technological observations from Drăgușeni with other contemporary archaeological assemblages (Fig. 1, sites 1–6) is challenging due to the limited availability of comparable published data. However, the site at Drăgușeni – *În Deal la Lutărie* (Vornicu-Țerna 2018, p. 51), a Cucuteni A4 settlement, provides a relevant parallel, where pointed tools were produced by *quadri*-partition using double grooving. At Berești – *Dealul Bulgarului* and Berești – *Dealul Bâzanului* (Cucuteni-Ariușd, phase A3), numerous antler fragments were documented that had not reached the stage of finished artefacts (Beldiman *et alii* 2012). These were primarily volumetric blanks and lacked the longitudinal bipartition observed at Drăgușeni – *Ostrov*. Similarly, *quadri*-partition by double grooving is uncommon for bone at these sites. Typologically, pointed and bevelled tools were present, but spoons and scrapers were absent. At Berești – *Dealul Bâzanului*, a container preform comparable to those from Drăgușeni was recorded (Beldiman *et alii* 2012, Plates 94–95).

*Bi*- or *quadri*-partition by double grooving was also absent at the Cucuteni A–B settlement of Costești – *Cier*, Romania (Vornicu 2014a). At Ruginoasa – *Dealul Drăghici* (Cucuteni A3), pointed tools were produced by longitudinal cutting through double grooving, as illustrated in Țurcanu and Bejenaru (2012, Fig. VIB.1). At the same site, volumetric blanks predominated for antler, and illustrations suggest segmentation by sawing on an antler tine (Țurcanu, Bejenaru 2012, Fig. VIB.6). At an earlier chronological horizon (Precucuteni culture, Fig. 1, sites 7–8), pointed tools were obtained by bipartition or *quadri*-partition using grooving at Târgu Frumos – *Baza Pătule* (Vornicu 2014b) and Isaiia – *Balta Popii* (Ursulescu *et alii* 2020). This continuity indicates that the method was part of inherited traditions maintained throughout later stages of the Cucuteni complex.

When making these correlations, it is essential to consider that observed differences may result from factors such as the size of the excavated area, excavation methods, and potentially regional variants within the Cucuteni–Trypillia cultural complex.

## CONCLUSIONS

The primary aim of this paper was to emphasise the importance of certain categories of archaeological remains—waste, blanks, and preforms—which are often more informative for reconstructing technological transformation sequences than finished artefacts yet frequently overlooked.

Within the studied assemblage, several common features emerge in the technological exploitation of antler and bone. In both cases, flat blanks predominate, indicating a preference for productive methods such as *bi-* or *quadri-*partition. For both raw materials, transversal debitage was dominated by direct percussion, followed by sawing; grooving was specific to bone, while bending was characteristic of antler. Longitudinal debitage consistently employed double grooving, whether for antler bipartition or bone *quadri-*partition. Grooving appears as a distinctive technological choice at Drăgușeni, despite its higher time investment compared to percussion. This technique offered clear advantages: blanks of predetermined shape and size, fewer technological accidents, and more efficient use of raw material, as flakes of various sizes could be reused rather than lost, as often occurs with percussion.

Typologically, bevelled tools and spoons were produced from both antler and bone, reflecting their suitability for these forms. Other categories show material-specific restrictions: pressure flakers and containers were made exclusively from antler due to shape requirements, while scrapers were produced only from bone, specifically scapulae. Except for a few pointed tools—possibly spear points—the finished artefacts were likely intended for domestic activities. A degree of standardisation in technological sequences was also observed, particularly for spoons and pointed tools, regardless of whether they were made from antler or bone or obtained through *bi-* or *quadri-*partition.

As highlighted in the discussion above, the techniques associated with the debitage method could not always be determined, either due to fracturing or because subsequent shaping erased earlier manufacturing marks. Starting from the blanks used for finished pieces, the general debitage method (e.g., transversal segmentation, longitudinal bipartition) could be identified. However, the presence or study of blanks alone is insufficient to establish the exact combination of techniques employed in their production. This is where products and by-products from earlier stages of the transformation chain become essential, as they retain diagnostic features. The reconstruction of debitage techniques in this study was therefore based on these elements. This reinforces the importance of such artefacts—often overlooked—for achieving a complete understanding of technological sequences in raw material transformation.

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- Vornicu-Țerna, 2018 – A. Vornicu-Țerna, *Tehnologia osului în preistorie. Artefacte din colecțiile Muzeului Județean Botoșani*, București, 2018.



## ABREVIERI / ABRÉVIATIONS / ABBREVIATIONS

- AA – Archäologischer Anzeiger. Deutsches Archäologisches Institut, Darmstadt, München, Tübingen–Berlin  
(A)ARMSI – Analele Academiei Române. Memoriile Secțiunii Istorice, București  
ACD – Acta Classica Universitatis Scientiarum Debrecenensis, Debrecen  
ActaArchHung – Acta Archaeologica Academiae Scientiarum Hungaricae, Budapest  
ActaHistArt – Acta historiae artium Academiae scientiarum Hungaricae, Akadémiai Kiadó, Budapesta  
ActaMN – Acta Musei Napocensis, Cluj-Napoca  
ActaMP – Acta Musei Porolissensis, Zalău  
AÉ – L'Année épigraphique, Paris.  
AIIA Iași – Anuarul Institutului de Istorie și Arheologie „A. D. Xenopol”, Iași  
AIIC – Anuarul Institutului de Istorie „George Barițiu”, Cluj  
AJBA – American Journal of Biological Anthropology  
AJPA – American Journal of Physical Anthropology  
AK – Archaeologiai Közlemények, Pest  
AnSt – Anatolian Studies, British Institute of Ankara  
AnUCDC – Analele Universității Creștine „Dimitrie Cantemir”  
AnUVT – Annales d'Université « Valahia » Târgoviște, Section d'Archéologie et d'Histoire  
AO – Arhivele Olteniei, Craiova  
ArchBulg – Archaeologia Bulgarica, Sofia  
ArchÉrt – Archaeológiai Értesítő, Budapest  
Argesis – Argesis. Muzeul Județean Argeș. Pitești  
ArhMed – Arheologia Medievală  
ArhMold – Arheologia Moldovei, Iași  
AȘUI – Analele Științifice ale Universității „Alexandru Ioan Cuza”, Iași  
Az Érem – Az Érem kiadványai, Budapest  
Banatica – Banatica. Muzeul Banatului Montan, Reșița  
BARBrSer – British Archaeological Reports. British Series, Oxford  
BARIntSer – British Archaeological Reports. International Series, Oxford  
BCMI – Buletinul Comisiunii Monumentelor Istorice  
BerRGK – Bericht der Romisch-Germanische Kommission des Deutschen Archäologischen Instituts, Frankfurt am Main  
BibIstroPontica-P – Biblioteca Istro-Pontica. Seria Patrimoniu, Tulcea  
BJ – Bonner Jahrbücher – Bonner Jahrbücher des Rheinischen Landesmuseums in Bonn, Bonn  
BMC – *Coins of the Roman Empire in the British Museum*, Londra: I, *Augustus to Vitellius*, 1923; II, *Vespasian to Domitian*, 1930; III, *Nerva to Hadrian*, 1936; IV, *Antoninus Pius to Commodus*, 1968; V, *Pertinax to Elagabalus*, 1950 (H. Mattingly); VI, *Severus Alexander to Balbinus and Pupienus*, 1962 (R.A.G. Carson).  
BMI – Buletinul Monumentelor Istorice, București  
BMJT – Buletinul Muzeului Județean Teleorman, Alexandria  
BSNR – Buletinul Societății Numismatice Române, București  
Buridava – Buridava. Studii și materiale, Muzeul Județean „Aurelian Sacerdoțeanu”, Râmnicu Vâlcea  
CA – Cercetări Arheologice. Muzeul Național de Istorie a României, București  
Caiete ARA – Caiete ARA. Asociația Arhitectură, restaurare, arheologie, București  
Carpica – Carpica. Complexul Muzeal „Iulian Antonescu” Bacău  
CCA – Cronica Cercetărilor Arheologice din România  
CEpR – Cronica Epigrafică a României  
Cerclst – Cercetări Istorice, Iași  
CICSA – Centrul de Istorie Comparată a Societăților Antice, Facultatea de Istorie, Universitatea din București  
CIL – *Corpus Inscriptionum Latinarum*, I–XVII, Berlin  
CN – Cercetări Numismatice. Muzeul Național de Istorie a României, București  
CNM, V.1 – *Corpus Nummorum Moldaviae*, vol. V.1, Chișinău  
CRAI – Académie des inscriptions et belles-lettres. Comptes rendus des séances de l'année ...  
Crisia – Crisia. Muzeul Țării Crișurilor, Oradea

- Dacia – Dacia / Dacia Nouvelle Série. Revue d'archéologie et d'histoire ancienne. Académie Roumaine. Institut d'archéologie « V. Pârvan », Bucarest
- Danubius – Danubius. Revista Muzeului de Istorie Galați
- DHA – Dialogues d'histoire ancienne, Institut des Sciences et Techniques de l'Antiquité
- Documenta Praehistorica – Documenta Praehistorica, University of Ljubljana, Faculty of Arts, Department of Archaeology, Ljubljana
- EphemDac – Ephemeris Dacoromana, Roma
- EphemNap – Ephemeris Napocensis, Cluj-Napoca
- ERSIR – *Enciclopedia reprezentanților scrisului istoric românesc*, I – V, V. Spinei, D. N. Rusu (coord.), Suceava, 2021
- FolArch – Folia Archaeologica. A Magyar Nemzeti Múzeum Évkönyve. Annales Musei Nationalis Hungarici, Budapest
- Fontes I – *Fontes Historiae Daco-Romanae – Izvoarele istoriei României*, I, București, 1964
- Fontes II – *Fontes Historiae Daco-Romanae – Izvoarele istoriei României*, II, București, 1970
- FSI – Forensic Science International
- Glasnik – Glasnik. Srpsko Arheološko Društvo (Journal of the Serbian Archaeological Society), Belgrad
- Hierasus – Hierasus. Muzeul Județean Buzău
- HOMO – HOMO. Journal of Comparative Human Biology, Stuttgart
- Ialomița – Ialomița. Studii de cercetări de arheologie, istorie, etnografie și muzeologie, Slobozia
- IDRE – C. C. Petolescu, *Inscriptiones Daciae Romanae. Inscriptiones externae – Inscriptions externes concernant l'histoire de la Dacie*, I-II, București, 1996-2000
- IGB – G. Mihailov, *Inscriptiones graecae in Bulgaria repertae*, vol. I-V, Sofia, 1956-1970
- IGLR – E. Popescu, *Inscripțiile grecești și latine din secolele IV–XIII descoperite în România*, București, 1976
- IGRR – *Inscriptiones Graecae ad Res Romanas pertinentes*, publiées par R. Cagnat, J. Toutain, G. Lafaye, Paris, 1906-1927
- IJP – International Journal of Paleopathology
- ISM – *Inscriptiones Daciae et Scythiae Minoris antiquae. Series altera: Inscriptiones Scythiae Minoris Graecae et Latinae – Inscriptiile din Sythia Minor*: I. *Inscriptiones Histriae et vicinia – Histria și împrejurimile* (Dionisie M. Pippidi), București, 1983; II. *Tomis et territorium – Tomis și teritoriul său* (Iorgu Stoian), București, 1987; III. *Callatis et territorium – Callatis et son territoire* (Alexandru Avram), București – Paris, 1999; IV. *Tropaeum – Durostorum – Axiopolis* (Emilian Popescu), București – Paris, 2015 ; V. *Capidava – Troesmis – Noviodunum* (Emilia Doruțiu-Boilă), București, 1980; VI.2. *Supplementa 2. Tomis et territorium – Tomis et son territoire* (Alexandru Avram, Maria Bărbulescu, Livia Buzoianu), București – Paris, 2018
- Istros – Istros. Muzeul Brăilei „Ferdinand I”, Brăila
- IzvestijaVarna – Izvestija na Narodnija Muzej (Izvestija na Varnenskoto Arheologičesko Družestvo), Varna
- JAHA – Journal of Ancient History and Archaeology, Cluj-Napoca
- JAS – Journal of Archaeological Science, Amsterdam
- JAT – Journal of Ancient Topography
- JFS – Journal of Forensic Studies
- JITE – Journal of Institutional and Theoretical Economics
- JHE – Journal of Human Evolution
- LRBC – *Late Roman Bronze Coinage A.D. 394-498*, Londra, 1965: I, *The Bronze Coinage of the House of Constantine A.D. 324–346* (P. V. Hill, J. P. C. Kent); II, *Bronze Roman Imperial Coinage of the Later Empire A.D. 346–498* (R. A. G. Carson, J. P. C. Kent).
- MarNero – Il Mar Nero. Annali di archeologia e storia, Roma
- MemAnt – Memoria Antiquitatis, Piatra Neamț
- Marmatia – Marmatia. Muzeul Județean de Istorie și Arheologie Maramureș, Baia Mare
- MCA – Materiale și Cercetări Arheologice, București
- MCSEE – Monedă și comerț în Sud-Estul Europei, Sibiu
- MEFRM – Mélanges de l'École française de Rome. Moyen Âge, Rome
- MER – *Catalogue des monnaies de l'Empire romain*. II. J.-B. Giard, *De Tibère à Néron*, Paris, 1988 ; III. J.-B. Giard, *Du soulèvement de 68 après J.-C. à Nerva*, Paris-Strasbourg, 1998
- MFMÉ-SA – A Móra Ferenc Múzeum Évkönyve – Studia Archaeologica, Szeged
- MIR – *Moneta Imperii Romani*. 14. B. Woytek, *Die Reichsprägung des Kaisers Traianus (98–117)*, I–II, Wien, 2010; 18. W. Szaivert, *Die Münzprägung der Kaiser Marcus Aurelius, Lucius Verus und Commodus (161–192)*, Wien, 1986.
- Mousaios – Mousaios. Buletinul Științific al Muzeului Județean Buzău
- MuzNaț – Muzeul Național, Muzeul Național de Istorie a României, București
- Numizmatičar – Numizmatičar. Casopis za anticki i stari jugoslovenski novac, Belgrad

- Numizmatikai Közlöny – Numizmatikai Közlöny. A Magyar Numizmatikai Társulat, Akadémiai Klado, Budapest
- NZ – Numismatische Zeitschrift, Viena
- Oltenia – Oltenia. Studii și Comunicări, Craiova
- Paléorient – Paléorient: revue interdisciplinaire de préhistoire et de protohistoire du sud-ouest et de l'Asie centrale, Paris
- PBF – Prähistorische Bronze Funde, München – Stuttgart
- Peuce – Peuce. Studii și cercetări de istorie și arheologie, Institutul de Cercetări Eco-Muzeale „Gavrilă Simion”, Tulcea
- PME – H. Devijver, *Prosopographia militiarum equestrium quae fuerunt ab Augusto ad Gallienum*, Leuven, I (A–I, 1976), II (I–V, 1977), III (1980; indici)
- Pontica – Pontica. Studii și materiale de istorie, arheologie și muzeografie, Muzeul de Istorie Națională și Arheologie, Constanța
- Przegląd Archaeologiczny – Przegląd Archaeologiczny, Institut Archeologii i Etnologii Polskiej Akademii Nauk, Wrocław
- PZ – Prähistorische Zeitschrift, Institut für Prähistorische Archäologie, Berlin
- RAASI – Revista de Arheologie, Antropologie și Studii Interdisciplinare, Institutul de Cercetări Bioarheologice și Etnoculturale, Republica Moldova
- RAN – Repertoriul Arheologic Național / National Archaeological Repository
- RCAN – Revista de Cercetări Arheologice și Numismatice, București
- RESEE – Revue des Études Sud-Est Européennes. Academia Română. Institutul de Studii Sud-Est Europeene, București
- RevArh – Revista Arheologică, Chișinău
- RGZM – Barbara Pferdehirt, *Römische Militärdiplome und Entlassungsurkunden in der Sammlung des Römisch-Germanischen Zentralmuseums*, Mainz, I-II, 2004
- RI – Revista Istorică. Institutul de Istorie „Nicolae Iorga”, București
- RIC – *The Roman Imperial Coinage*, Londra: I<sup>2</sup>, *From 31 BC to AD 69*, 1984 (C. H. V. Sutherland); II, *Vespasian to Hadrian*, 1926 (H. Mattingly, E.A. Sydenham); II.1, *From AD 69–96. Vespasian to Domitian*, 2007 (I. A. Carradice, T.V. Buttrey); II.3, *From AD 117–138. Hadrian*, 2019 (R.A. Abdy, P.F. Mittag); III, *Antoninus Pius to Commodus*, 1930; IV.1, *Pertinax to Geta*, 1968 (H. Mattingly, E.A. Sydenham); IV.2, *Macrinus to Pupienus*, 1938; IV.3, *Gordian III – Uranian Antoninus*, 1949 (H. Mattingly, E. A. Sydenham, C. H. V. Sutherland); V.1, 1927 (reimprimat 1968; P. H. Webb); VII, *Constantine and Licinius A.D. 313–337*, 1966 (P.M. Bruun); VIII, *The Family of Constantine I A.D. 337–364*, 1981; X, *The Divided Empire and the Fall of the Western Parts A.D. 395–491*, 1994 (J.P.C. Kent)
- RMD – Margaret M. Roxan, *Roman Military Diplomas*, London: I. *Roman Military Diplomas 1954–1977*, 1978; II. *Roman Military Diplomas 1978–1984*, 1985; III. *Roman Military Diplomas 1985–1993*, 1994; Margaret M. Roxan, P. Holder, *Roman Military Diplomas IV*, 2003; P. Holder, *Roman Military Diplomas V*, 2006
- RMM-MIA – Revista Muzeelor și Monumentelor – Monumente Istorice și de Artă, București
- Romanoslavica – Romanoslavica. Asociația Slaviștilor din România, București
- RPC – *Roman Provincial Coinage*, Oxford ([https://rpc.ashmus.ox.ac.uk/search/map?volume\\_id=](https://rpc.ashmus.ox.ac.uk/search/map?volume_id=))
- RPC, VII.2 – *Roman Provincial Coinage. VII.2. From Gordian I to Gordian III (AD 238–244): all provinces except Asia*, Londra/Paris, 2022 (J. Mairat, M. Spoerri Butcher, cu contribuția M. Amandry, R. Bland, K. Butcher, J. Nurpetlian, U. Peter).
- RRH – Revue Roumaine d'Histoire, Bucarest
- SAA – Studia Antiqua et Archaeologica, Iași
- SCIA.AP – Studii și Cercetări de Istoria Artei. Seria Artă Plastică
- SCIV(A) – Studii și Cercetări de Istorie Veche (și Arheologie), București
- SCN – Studii și Cercetări de Numismatică, București
- SHA – *Scriptores Historiae Augustae*, Teubner, Leipzig, 1965
- Simpozion Chișinău 2003 – *Simpozion de numismatică dedicat Centenarului Societății Numismatice Române (1903–2003)*, Chișinău, 26–28 noiembrie 2003, București, 2005.
- SMIM – Studii și Materiale de Istorie Medie. Institutul de Istorie „Nicolae Iorga”, București
- SMMIM – Studii și Materiale de Muzeografie și Istorie Militară, București
- SNGCop 2 – *Sylloge Nummorum Graecorum. The Royal Collection of Coins and Medals, Danish Royal National Museum*, Copenhaga, 1942–1969 (serie reeditată); II, *Thrace and Macedonia*, West Milford, 1982.
- SP – Studii de Preistorie, București
- StCl – Studii Clasice, București
- StratumPlus – Stratum Plus, Școala Superioară de Antropologie, Chișinău, St Petersburg, București
- Suceava – Suceava. Anuarul Muzeului Național al Bucovinei, Suceava
- SympThrac – Symposia Thracologica, București
- Syria – Syria. Archéologie, art et histoire. Institut Français du Proche-Orient
- TdE – Trabajos de Egiptología. Papers on Ancient Egypt, Universidad de La Laguna, Tenerife, Spania

Th-D – Thraco-Dacica, București

Tyragetia – Tyragetia. Anuarul Muzeului Național de Istorie a Moldovei, Chișinău

VAH – Varia Archaeologica Hungarica V. Redigit Csanád Bálint. Publicationes Instituti Archaeologici Academiae Scientiarum Hungaricae, Budapest

Valachica – Valachica. Studii și cercetări de istorie și istoria culturii, Complexul Muzeal Național „Curtea Domnească”, Târgoviște

ZPE – Zeitschrift für Papyrologie und Epigraphik, Bonn

ZRVI – Zbornik radova Vizantološkog instituta. The Institute for Byzantine Studies. Serbian Academy of Sciences and Arts, Belgrad